

First record of *Calliactis tricolor* (Le Sueur, 1817) (Cnidaria, Actiniaria, Hormathiidae) in the Veracruz reef system, southwestern Gulf of Mexico

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Abstract

The sea anemone *Calliactis tricolor* (Le Sueur, 1817) is an ecologically important member of the benthic community in coastal and coral reefs of the tropical Atlantic, particularly for their propensity to establish mutualistic symbiotic relationships with hermit crabs. This species is presumably distributed throughout the Gulf of Mexico; however, it had never been recorded in the southwestern part of the Gulf. Here we document the first record of *C. tricolor* in 2 coral reef localities of the Veracruz reef system, Mexico, and update the number of species of sea anemones known for the region.

Key words

Anthozoa; sea anemone; coral reefs; epibiont; hermit crab.

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Introduction

Calliactis tricolor (Le Sueur, 1817) is one of the most well-known sea anemone species inhabiting coral reefs and shallow coastal waters of the western Atlantic. Particular attention has been paid to this species due to its propensity to establish close mutualistic symbiotic relationships with hermit crabs, such as *Pagurus pollicaris* Say, 1817, *Dardanus venosus* (Milne-Edwards, 1848), *Dardanus fucosus* Biffar and Provenzano, 1972, and *Petrochirus diogenes* (Linnaeus, 1758), among other crustaceans (Cutress and Ross 1969, Cutress et al. 1970,

Mariscal 1972, López-Victoria et al. 2004).

In this symbiotic relation, 1 to several individuals of *C. tricolor* live as epibionts on gastropod mollusk shells occupied by hermit crabs. Sea anemones are known to protect hermit crabs from their natural predators, such as the crab *Calappa flammea* (Herbst, 1794) and the octopus *Octopus joubini* Robson, 1929 (McLean and Mariscal 1973, Bach and Herrnkind 1980, McLean 1983). Hermit crabs, on the other hand, provide protection for *C. tricolor* against predators such as the sea star *Echinaster spinulosus* Verrill, 1869 and the fireworm *Hermodice*

carunculata (Pallas, 1766) (Brooks and Gwaltney 1993). In addition, sea anemones are benefited by having a hard substrate on which to attach, and by the interception of food particles while crabs feed (Bach and Herrnkind 1980).

The known distribution of *C. tricolor* ranges from North Carolina and the northeastern coast of Gulf of Mexico to Brazil, including eastern and southern Caribbean Sea (Carlgren and Hedgpeth 1952, Zamponi et al. 1998). Although this species has been reported in the Campeche Bank and in the northwestern Gulf of Mexico (González-Muñoz et al. 2013), it had never been recorded in the southwestern part of the Gulf, despite several surveys documenting local sea anemone diversity within the last 30 years, particularly in the Veracruz reef system (VRS) (González-Muñoz et al. 2015a).

Jordán-Dahlgren (2002) suggested limited ecological connectivity between the reefs of the Caribbean and the Campeche Bank with the reef systems from the southwestern Gulf of Mexico. He observed a westward decreasing gradient pattern in gorgonian diversity and abundance from the Yucatan straits to the southwestern Gulf of Mexico, as well as a northward decreasing gradient pattern in the southwestern Gulf of Mexico, from the VRS to the Tuxpan and Isla Lobos reef systems. This limited connectivity could possibly explain the absence in the VRS of some sea anemones species that, like *C. tricolor*, are commonly found in the reefs of the Caribbean and the Campeche Bank, such as *Condylactis gigantea* (Weinland, 1860), and *Lebrunia neglecta* Duchassaing & Michelotti, 1860 (González-Muñoz et al. 2015a).

In the present study, we document the presence of *C. tricolor* in 2 coral reef localities of the VRS. Although *C. tricolor* could have been overlooked for years in the region, it is possible that this species was absent in this coral system until recently, suggesting potential connectivity between distant reef systems in the Gulf of Mexico.

This record increases the number of sea anemone species known for the VRS and contributes with original data for biogeographic studies of sea anemones distribution in the Gulf of Mexico by filling gaps of the known distribution range of *C. tricolor*.

Methods

During a field study in May 2015, 1 individual of *Calliactis tricolor* was observed attached to a shell of the gastropod mollusk *Fasciolaria tulipa* (Linnaeus, 1758) occupied by the hermit crab *Petrochirus diogenes*, in Isla de Enmedio reef, which is 1 of the 25 coral reef localities of the VRS (Chávez et al. 2007). The mollusk shell was apparently very old and covered with sand, algae, small stones, and crustose coralline algae. The sea anemone was photographed, collected, relaxed in a 5% MgCl₂ seawater solution, and subsequently fixed in 10% seawater formalin to be transferred to the laboratory for identification. The specimen was collected under consent of Mexican law, with a collecting permit approved

by the Comisión Nacional de Acuacultura y Pesca (no. 07332.250810.4060).

A second individual of *C. tricolor* was observed in May 2016, attached to a shell of *Sinistrofulgur sinistrum* (Hollister, 1958) occupied by the hermit crab *Dardanus fucosus*, in La Gallega reef, VRS. On this occasion, the anemone was measured and photographed, but not collected. The taxonomic identification of the observed specimens was based on external anatomy, following Carlgren and Hedgpeth (1952) and González-Muñoz et al. (2013).

Previous data on distribution of *C. tricolor* were obtained from main online biodiversity and biogeographic databases, including the Global Biodiversity Information Facility (GBIF 2017), the Oceanographic Biogeographic Information System (OBIS 2017), and Hexacorallians of the World (HoW) (Fautin 2013), as well as those from published articles, and 2 doctoral theses (Corrêa 1964, Gusmão 2010). As some distributional records from the online databases were incomplete, the names of the localities were searched and added for those records which only had data on geographic coordinates. Alternatively, geographic coordinates were inferred from those records which had only locality name. Duplicated records from different sources, records without locality names and geographic coordinates were disregarded, as well as those without reference for the specialist who identified the species by observation or specimen examination. These data (Appendix, Table A1) were used to construct a map with the distribution of *Calliactis tricolor* in the West Atlantic.

Results

Material examined. 1 specimen, 7 May 2015, Isla de Enmedio reef (19°05.5' N, 095°58.2' W), collected by José Luis Tello-Musi, deposited in the scientific collection of Cnidarios del Golfo de México y el Mar Caribe, Universidad Nacional Autónoma de México (UNAM) (voucher code: YUC-CC-254-11-001378).

Identification. Collected and observed specimens were identified as *Calliactis tricolor* (Le Sueur, 1817) (Fig. 1a, b).

Observed features of the collected specimen (Fig. 1a) are the following: column smooth but rough in appearance, orange-red to beige, with small longitudinal white spots in the proximal column, relative to the mesenterial insertions. Two rows of dark-orange cinclides in the proximal column and close to the limbus; first row with 12 cinclides and second with 24, arranged as follows: 2 smaller cinclides of the second row between each pair of the 12 larger cinclides of the first row. Bright-orange acontia protruding from cinclides and from the oral disc. Pedal disc about 27 mm in its larger diameter.

The second specimen (not collected) was observed with the oral disc and tentacles completely expanded and presented the following diagnostic features (Fig. 1b): oral

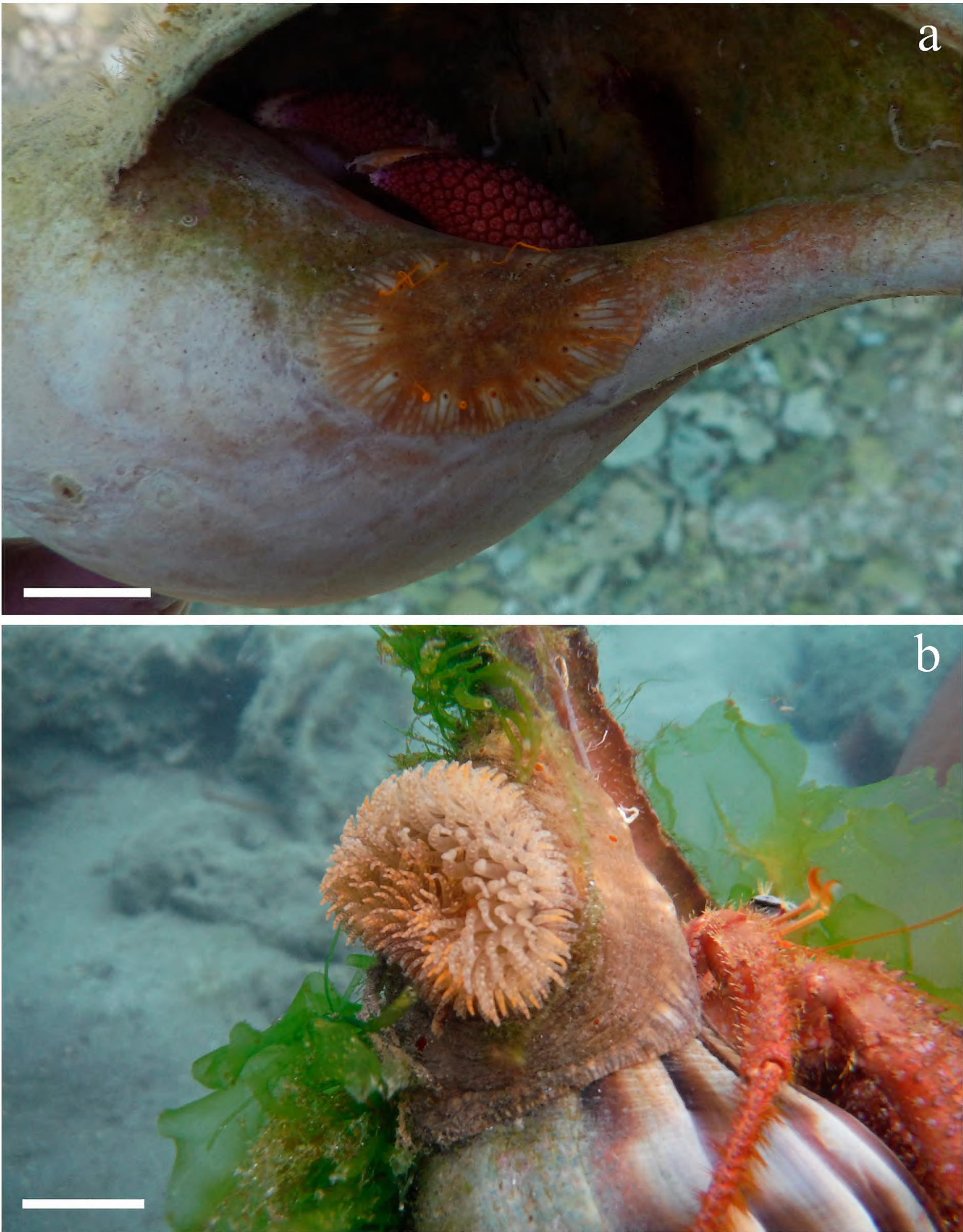


Figure 1. Specimens of *Calliactis tricolor* found in the Veracruz Reef System, southwest Gulf of Mexico. **a)** Specimen attached to a shell of *Fasciolaria tulipa* occupied by *Petrochirus diogenes* in Isla de Enmedio reef. **b)** Specimen attached to a shell of *Sinistrofulgur sinistrum* occupied by *Dardanus fucosus*, in La Gallega reef. Scale bar = 10 mm.

disc smooth, beige to pale-orange and translucent. Tentacles smooth, slender, moderately short, tapering distally, beige to pale-orange, with longitudinal rows of white dots along its entire length, and sometimes with orange flashes at the tips. Column cylindrical, trumped-shaped

when expanded and dome-shaped when contracted, divided into capitulum and scapus. Capitulum short, beige, translucent; scapus robust, wrinkled-texture, beige to pale-orange, and with short white longitudinal spots and 2 rows of dark-orange cinclides proximally, which



Figure 2. Known distribution of the sea anemone *Calliactis tricolor*. Gray dots represent previous records; red triangles represent the new records in the southwest Gulf of Mexico, at the Veracruz reef system.

are of different sizes. Pedal disc about 47 mm in its longer diameter.

Data on distribution of *Calliactis tricolor*. We obtained 297 records of *C. tricolor* from GBIF (2017), OBIS (2017), HoW (Fautin 2013), and published articles, of which 63 were disregarded following the criteria mentioned above; thus, 234 previous records were considered (Appendix, Table A1). Figure 2, based on these data, shows the known distribution of *C. tricolor* in the western Atlantic.

Discussion

The collected specimen was found with the oral disc and tentacles completely contracted, and they remained so during relaxation process. Thus, it had to be fixed in this position. However, external anatomy and coloration of the column are sufficient for identification, and the specimen corresponded to the diagnostic features of *Calliactis tricolor*. The taxonomic features of the observed

(not collected) specimen also fitted well with *C. tricolor*, particularly in the pattern coloration of the column, cinclides, oral disc, and tentacles.

In her study on sea anemones symbiotic with hermit crabs, Gusmão (2010) mentioned that *C. tricolor* is the only species of the genus distributed in the western Atlantic. However, there are few records of *Calliactis polypus* (Forsskål, 1775) in the northern Gulf of Mexico (Dawson 1966), the eastern coast of the USA, and in Guyana (OBIS 2017, GBIF 2017), although this species is mainly distributed in the Red Sea, Hawaii, French Polynesia, Australia, South Africa, East Africa, Maldives, Cape Verde Island, Japan, Galapagos, and the Pacific coast of Panamá (Garese et al. 2009, Gusmão 2010). Live specimens of *C. tricolor* and *C. polypus* can be easily distinguished by the coloration of the cinclides in the proximal column, being dark-red to dark-orange in the former and white in the later (Gusmão 2010, González-Muñoz et al. 2013). As *C. polypus* has been reported only once in the Gulf of Mexico (Dawson 1966), it is possible

that the report of its presence is result of a probable misidentification, but this needs to be corroborated with the review of those specimens.

Because the anomuran crabs *Dardanus venosus*, *D. fucosus*, *P. diogenes*, *P. pollicaris*, as well as the brachyuran crabs *Stenocionops furcatus* (Olivier, 1791), *Callinectes danae* Smith, 1869, *Hepatus epheliticus* (Linnaeus, 1763), and *Hepatus pudibundus* (Herbst, 1785) are among the crustacean species that have been documented in association with *C. tricolor*, and all of them have been reported along the Mexican Atlantic coast (Arenas-Fuentes and Ramos-Rivera 2017, León-García and Ramos-Rivera 2017, Raz-Guzmán and Ramos-Rivera 2017, Rodríguez-Almaráz and Ramos-Rivera 2017), the interaction between these crustaceans and the sea anemone, as well as its dispersal along the coast of Gulf of Mexico could have favored the presence of *C. tricolor* into the region.

The nearest previous record of *C. tricolor* in the Gulf of Mexico, at a site between Tamaulipas, Mexico, and Texas, USA, about 50 km to the nearest coast (Gusmão 2010) is about 635 km north from the new records documented here. The second nearest previous record is about 650 km east, recorded by González-Muñoz et al. (2013) in Serpientes reef, about 50 km from the nearest coast. The new record here documented fills a gap of over 1500 km of coastline in the known distribution of *C. tricolor* (Fig. 2).

Currently, there are 21 sea anemone species formally reported in the Atlantic coast of Mexico (González-Muñoz et al. 2012, 2013, 2015a, 2015b, 2018), of which 15 have been documented in the VRS (González Muñoz et al. 2015a). The occurrence of *C. tricolor* increases the number of the known sea anemone species for the VRS to 16.

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Appendix

Table A1. Records of the known distribution of the sea anemone *Calliactis tricolor*.

*Data completed by: A = Locality name inferred by geographic coordinates; B = Coordinates inferred by locality name; C = Complete data

No.	Source	Occurrence ID or citation	Country	Locality	Data completed by*	Latitude	Longitude	Depth (m)	Year
1	GBIF	6f94f22e-552d-4310-bb2c-6faf1d488a51	USA	Marineland Marina, Florida	A	29.669	-81.215		2016
2	GBIF	http://n2t.net/ark:/65665/3ffde92cf-f33b-4e73-92f5-a70edcf88fc2	USA	Off Sea Island, Georgia	A	31.142	-81	15	1940
3	GBIF	http://n2t.net/ark:/65665/3fd5cda19-3c3a-441a-a457-09fa7ebcb28e	USA	St. John Island, Cabritte Horn Point, US Virgin Islands	B	18.307	-64.688	15	1960
4	GBIF	http://n2t.net/ark:/65665/3fc4edd1a-517d-4ec7-b5f0-7ef43c07f9b9	USA	Port Aransas, Texas	A	27.83	-97.05		1946
5	GBIF	http://n2t.net/ark:/65665/3ef3840c4-30b9-4759-a42b-9563b0876089	Barbados	Pelican Island, 1.5 Mile SW off Barbados	A	13.17	-59.53	18	1918
6	GBIF	http://n2t.net/ark:/65665/3ed206259-c07e-429d-944b-1189025a5235	USA	Beaufort, North Carolina	A	34.72	-76.65		1954
7	GBIF	http://n2t.net/ark:/65665/3e555ac5d-70bb-47c3-b4c2-1c17ec81acc0	USA	Off Tybee Island Georgia	A	31.892	-80.575	15	1940
8	GBIF	http://n2t.net/ark:/65665/3e403780b-96c5-4a47-899b-e91594ff741a	USA	Morgan City, S of Louisiana	B	29.38	-91.32	6.5	1945
9	GBIF	http://n2t.net/ark:/65665/3e2c190df-bda5-44cc-9a7a-e00568b65456	USA	Off coast, between US and Bermuda	A	30.933	-71.001	18	1940
10	GBIF	http://n2t.net/ark:/65665/3e0a30311-c012-4adb-8293-56e4d724a4ec	USA	Beaufort Bar, E of	B	34.72	-76.65	12	1962
11	GBIF	http://n2t.net/ark:/65665/3db3ddea2-4d7e-44db-b118-ac43283365ae	USA	Sarasota Bay, Near Longboat Key	B	27.41	-82.65		1951
12	GBIF	http://n2t.net/ark:/65665/3c45c5532-51a5-4f32-bdcd-948da2f2e0b2	USA	Bay Marchand Lease Area, Port Fourchon, Louisiana	A	29.047	-90.163	12	1979
13	GBIF	http://n2t.net/ark:/65665/39ae9cbfb-155c-4b44-a304-fc298a3f00d1	USA	Doboy Channel, Doboy Island, Georgia	B	31.39	-81.3		1957
14	GBIF	http://n2t.net/ark:/65665/398b041e9-fb30-4b61-853d-2022023af9d2	USA	St. John Island, Lameshur Bay, US Virgin Islands	B	18.32	-64.73		1959
15	GBIF	http://n2t.net/ark:/65665/3973b0823-13ea-40ef-83a9-4ab4be5a3cd4	USA	St. John Island, Lameshur Bay, US Virgin Islands	B	18.32	-64.73		1961
16	GBIF	http://n2t.net/ark:/65665/394825c1d-4bdf-4508-bfe7-ecd0c759930e	USA	Bay Marchand Lease Area, Port Fourchon, Louisiana	A	29.047	-90.163	12	1978
17	GBIF	http://n2t.net/ark:/65665/38e8fba50-5999-4aa0-a795-d6cf8984564c	Puerto Rico	La Parguera	B	17.97	-67.04		1957
18	GBIF	http://n2t.net/ark:/65665/38d31f075-e87b-412b-9c09-b6d4c226b3aa	USA	Cape Hatteras, North Carolina	A	35.354	-75.388	26	1884
19	GBIF	http://n2t.net/ark:/65665/38356a75b-6a5d-46fe-9957-4e748fa8af93	USA	Sapelo Island, Georgia	B	31.442	-81.227		1958
20	GBIF	http://n2t.net/ark:/65665/37f0479c2-2ee5-4fa7-8ecd-1e837833992b	USA	Open Sea, between Georgia and South Carolina	A	31.608	-79.72	73	1940
21	GBIF	http://n2t.net/ark:/65665/37bc6af89-08e9-4c6e-a477-10d194829832	USA	Open Sea, in front of South Carolina	A	32	-80.42	18	1940
22	GBIF	http://n2t.net/ark:/65665/379875ba9-22e2-4f62-9e63-cb72385fd5d7	USA	Port Isabel, Bay Area, Texas	B	26.11	-97.23		1958
23	GBIF	http://n2t.net/ark:/65665/37893a4d8-05f2-4d07-9ce8-2f508dd3fbf3	USA	Aransas Pass, Texas	B	27.82	-97.04		1938
24	GBIF	http://n2t.net/ark:/65665/374aff266-c79f-4226-b0b2-cdb139086090	USA	Charlotte Harbor, Florida	B	26.9	-82.13		1887
25	GBIF	http://n2t.net/ark:/65665/37434864c-508a-49b5-abb3-a91590cd4499	USA	Tampa Bay, Florida	B	27.74	-82.55		1901
26	GBIF	http://n2t.net/ark:/65665/36f8437a4-bdb0-46da-a23d-ed955c437730	USA	Off E Coast, in front of Florida	A	28.13	-79.9	183	1940
27	GBIF	http://n2t.net/ark:/65665/36dd40ec2-cb64-40dd-9c97-6456bdfd943e	USA	Port Aransas, 2 Mile N of, Texas	B	27.84	-97.03	6	1938
28	GBIF	http://n2t.net/ark:/65665/36bcfd0fd-db8b-45d6-901d-b9143116d6f5	Puerto Rico	Turrumote Island	B	17.94	-67.05	20	1964
29	GBIF	http://n2t.net/ark:/65665/36b65512f-b5db-4056-ae96-c85983a8cfcc	Puerto Rico	6 Km S of Turrumote Island, off Parguera	C	17.997	-67.053	20	1964
30	GBIF	http://n2t.net/ark:/65665/365bb9465-7a8e-4341-8a72-5a357f066ed9	USA	off North Carolina	C	33.537	-77.418	29	1980
31	GBIF	http://n2t.net/ark:/65665/35b05c427-88d6-4251-b2d0-e74fa9af8f5b	UK	Peter Island, Little Bay, British Virgin Islands	B	18.35	-64.58	21.5	1958
32	GBIF	http://n2t.net/ark:/65665/34e00a209-cf9e-4c06-9c98-e9c078971075	USA	Bay Marchand Lease Area, Louisiana	A	29.047	-90.163	12	1979
33	GBIF	http://n2t.net/ark:/65665/33f793879-2949-4fd6-8cc3-586696ae73cf	Suriname	Off of the Mouth Of The Suriname River	C	6.38	-55.092	27	1957
34	GBIF	http://n2t.net/ark:/65665/33f5cb32d-1b28-4b5c-add4-02a152cd7a36	USA	Off Alabama	A	29.875	-88.07	35	1950
35	GBIF	http://n2t.net/ark:/65665/33edba864-84d7-4716-b077-d7f84c95d56e	Puerto Rico	Mayaguez	B	18.2	-67.16		1899

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36	GBIF	http://n2t.net/ark:/65665/33a44953f-9480-4efa-8196-f5e30df2e126	USA	Bay Marchand Lease Area, Louisiana	A	29.047	-90.163	12	1978
37	GBIF	http://n2t.net/ark:/65665/339270f08-74b4-4d84-8709-68d8e9124d64	Surinam	Off of the Mouth OfThe Suriname River	C	6.5	-55.87	31	1958
38	GBIF	http://n2t.net/ark:/65665/331863bf0-005c-49dc-a019-1930cab97c55	USA	Fort Macon, North Carolina	B	34.679	-76.682		1872
39	GBIF	http://n2t.net/ark:/65665/32cbd706-5470-402d-8edf-9f7de8ad710c	USA	Beaufort Bar, E of	B	34.72	-76.65	12	1962
40	GBIF	http://n2t.net/ark:/65665/31c38dc45-ae04-4d8b-8fb6-bbdfc45b022f	USA	Beaufort Bar, E of	B	34.72	-76.65	12	1962
41	GBIF	http://n2t.net/ark:/65665/3180ed228-ee63-45f6-9930-4890154788cc	Surinam	Off mouth of the Suriname River	C	6.37	-55.1	26	1957
42	GBIF	http://n2t.net/ark:/65665/31003434c-5b43-4fb5-86f3-5367691ebf9d	USA	Off North Carolina	A	34.55	-76.68	16	1940
43	GBIF	http://n2t.net/ark:/65665/30c825732-72cd-4189-b9bc-b23eec5b68ae	USA	Off E coast, Daytona Beach, Florida	A	29.158	-80.875	18	1940
44	GBIF	http://n2t.net/ark:/65665/302fc8dc5-e8ac-4ffc-9476-cfb6729cfe48	USA	Florida Keys, Key West	B	24.55	-81.74		1889
45	GBIF	urn:catalog:TCWC:Marine Invertebrates:5-1881	USA	South Texas shelf, Texas	A	28.2	-96.45	18	1976
46	GBIF	urn:catalog:TCWC:Marine Invertebrates:5-0039	USA	NW Gulf of Mexico, in front Galveston Island, Texas	A	29.237	-94.43	17	1971
47	GBIF	urn:catalog:TCWC:Marine Invertebrates:5-0037	USA	NW Gulf of Mexico, in front Bay City, Texas	A	28.5	-95.727	19	1971
48	GBIF	urn:catalog:TCWC:Marine Invertebrates:5-0040	USA	NW Gulf of Mexico, in front Galveston Island, Texas	A	29.237	-94.43	17	1971
49	GBIF	urn:catalog:TCWC:Marine Invertebrates:5-0041	USA	NW Gulf of Mexico, in front Galveston Island, Texas	A	29.237	-94.43	17	1971
50	GBIF	urn:catalog:TCWC:Marine Invertebrates:5-0044	USA	NE Gulf of Mexico, in front Grand Isle, Louisiana	A	29.183	-88.958	18	1972
51	GBIF	urn:catalog:TCWC:Marine Invertebrates:5-0043	USA	NE Gulf of Mexico, in front Grand Isle, Louisiana	A	28.717	-89.833	82	1972
52	GBIF	urn:catalog:TCWC:Marine Invertebrates:5-0045	USA	NE Gulf of Mexico, in front New Orleans, Louisiana	A	29.667	-88.683	18	1972
53	GBIF	urn:catalog:TCWC:Marine Invertebrates:5-0036	USA	NW Gulf of Mexico, in front Aransas, Texas	A	27.625	-96.545	59	1971
54	GBIF	urn:catalog:TCWC:Marine Invertebrates:5-0035	USA	NW Gulf of Mexico, in front Port Lavaca, Texas	A	28.22	-95.975	28	1971
55	GBIF	urn:catalog:TCWC:Marine Invertebrates:5-0034	USA	NW Gulf of Mexico, in front Port Lavaca, Texas	A	28.147	-95.8	40	1971
56	GBIF	urn:catalog:TCWC:Marine Invertebrates:5-0038	USA	NW Gulf of Mexico, open sea in front Louisiana	A	28.408	-92.5	59	
57	GBIF	urn:catalog:TCWC:Marine Invertebrates:5-0042	USA	NE Gulf of Mexico, in front Triumph, Louisiana	A	28.717	-89.483	108	1972
58	GBIF	urn:catalog:TCWC:Marine Invertebrates:5-0033	USA	NW Gulf of Mexico, in front Galveston Island, Texas	A	28.95	-94.912	10	1971
59	GBIF	urn:catalog:TCWC:Marine Invertebrates:5-0032	USA	NW Gulf of Mexico, in front Galveston Island, Texas	A	29.133	-94.883	11	1970
60	GBIF	NRM:EVmain:137242	Jamaica	Jamaica	C	18	-77		1898
61	GBIF	b02a7717-1c6f-4185-af6b-c8cd37396458	USA	Off Hillsborough Inlet, Broward Co., Florida	B	26.26	-80.08		1978
62	GBIF	MCZ:IZ-43776	USA	Little Lameshur Bay, St. John, US Virgin Islands	B	18.31	-64.73	9	1983
63	HoW	McMurrich (1898)	Cuba	Cuba, Caribbean Sea, Bahia Honda	B	23.03	-83.2		1898
64	HoW	Duerden (1898)	Jamaica	Jamaica, Kingston Harbour	B	17.99	-76.8		1898
65	HoW	Field (1949)	USA	North Carolina, Beaufort, Shackleford Banks	C	34.72	-76.66		1949
66	HoW	Field (1949)	USA	North Carolina, Beaufort, off Fort Macon Beach	C	34.72	-76.66		1949
67	HoW	Field (1949)	USA	North Carolina, Beaufort, Gallent's channel, Newport River	C	34.72	-76.66		1949
68	HoW	Carlgren & Hedgpeth (1952)	USA	Gulf of Mexico, Port Aransas, Texas	C	27.83	-97.06	18-27	1952
69	HoW	Duerden (1902)	Puerto Rico	Mayaguez Harbor	C	18.2	-67.14		1902
70	HoW	Zamponi et al. (1998)	Brazil	Amapá-Maranhão	C	-0.61	-47.28		1998
71	HoW	Zamponi et al. (1998)	Brazil	Ceará-Sergipe	C	-5.33	-35.33		1998
72	HoW	Zamponi et al. (1998)	Brazil	Bahia	C	-14.8	-38.9		1998
73	HoW	Zamponi et al. (1998)	Brazil	Espírito Santo	C	-19.8	-40		1998
74	HoW	Zamponi et al. (1998)	Brazil	Rio de Janeiro	C	-22.88	-43.17		1998

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75	HoW	Zamponi et al. (1998)	Brazil	São Paulo	C	-24.08	-46.55		1998
76	HoW	Zamponi et al. (1998)	Brazil	Paraná–Santa Catarina	C	-26.81	-48.56		1998
77	HoW	Dube (1974)	Brazil	Bahia, Ilha de Itaparica, Santo Amaro do Catu Jeribatuba)	C	-13.07	-38.8		1974
78	HoW	Cary (1906)	USA	Louisiana, Cameron	C	29.8	-93.33		1906
79	HoW	Cary (1906)	USA	Louisiana, Chandeleur Islands	C	29.84	-88.83		1906
80	HoW	Britton and Morton (1989)	USA	Texas, Gulf of Mexico, W part, in front Port Aransas	A	27.5	-96.5		1989
81	HoW	Cutress, Ross, & Sutton (1970)	Puerto Rico	La Parguera, Puerto Rico	C	17.97	-67.04		1970
82	Original article	Bach & Herrnkind (1980)	USA	Bay Mouth Bar, Florida	B	29.91	-84.41		1980
83	Original article	Bach & Herrnkind (1980)	USA	Dog Island Shoals, Florida	B	29.82	-84.59		1980
84	Original article	Bach & Herrnkind (1980)	USA	Turkey Point Shoal, Florida	B	25.44	-80.32		1980
85	Original article	Brooks & Gwaltney (1993)	USA	St. Joseph Bay, Florida	B	29.75	-85.36		1993
86	Original article	Brooks & Mariscal (1985)	USA	Turkey Point, Florida	B	25.44	-80.32		1985
87	Original article	Brooks & Mariscal (1985)	USA	St. Joseph Bay, Florida	B	29.75	-85.36		1985
88	Original article	Brooks & Mariscal (1986a)	USA	Turkey Point, Florida	B	25.44	-80.32		1986
89	Original article	Brooks & Mariscal (1986a)	USA	St. Joseph Bay, Florida	B	29.75	-85.36		1986
90	Original article	Brooks & Mariscal (1986b)	USA	St. Joseph Bay, Florida	B	29.75	-85.36		1986
91	Original article	Brooks (1995a)	USA	Beaufort, North Carolina	B	34.72	-76.65		1995
92	Original article	Brooks (1995b)	USA	Beaufort, North Carolina	B	34.72	-76.65		1995
93	Original article	Hidaka & Mariscal (1988)	USA	Turkey Point, Florida	B	25.44	-80.32		1988
94	Original article	López-Victoria et al. (2004)	Colombia	Concha Bay, Tayrona Park	B	11.3	-74.15		2004
95	Original article	Nogueira et al. (2006)	Brazil	Litoral sur del Estado de Paraná, Municipio de Guaratuba	B	-25.33	-48.17		2006
96	Original article	Nogueira et al. (2006)	Brazil	Región limitrofe entre Guaratuba e Itapoá	B	-25.92	-48.4		2006
97	Original article	Rittschhof et al. (1998)	USA	Beaufort, North Carolina	B	34.72	-76.65		1998
98	Original article	González-Muñoz et al. (2016)	Venezuela	Morrocay National Park	B	10.84	-68.25		2016
99	Original article	González-Muñoz et al. (2016)	Venezuela	Mochima National Park	B	10.39	-64.37		2016
100	Original article	González-Muñoz et al. (2016)	Venezuela	Playa San Luis, Cumaná	B	10.42	-64.22		2016
101	Original article	González-Muñoz et al. (2016)	Venezuela	La Chica, Golfo de Cariaco, Sucre	B	10.45	-63.92		2016
102	Original article	González-Muñoz et al. (2016)	Venezuela	Laguna de Piedras, Bajo Manzanillo, Isla Margarita	B	10.91	-64.1		2016
103	Original article	González-Muñoz et al. (2016)	Venezuela	Laguna de la Restinga, Canal de Entrada, Isla Margarita	B	10.98	-64.17		2016
104	Original article	González-Muñoz et al. (2016)	Venezuela	Isla de Cubagua, Las Cabeceras	B	10.84	-64.15		2016
105	Original article	González-Muñoz et al. (2016)	Venezuela	Isla de Cubagua, La Brea	B	10.83	-64.21		2016
106	Original article	González-Muñoz et al. (2016)	Venezuela	Isla Testigo Grande, Los Testigos	B	11.37	-63.11		2016
107	Original article	González-Muñoz et al. (2016)	Venezuela	Los Roques Archipelago	B	11.79	-66.89		2016
108	Original article	González-Muñoz et al. (2013)	Mexico	Arrecife Madagascar, Yucatán	C	21.44	-90.29		2013
109	Original article	González-Muñoz et al. (2013)	Mexico	Arrecife Serpientes, Yucatán	C	21.44	-90.47		2013
110	Original article	González-Muñoz et al. (2013)	Mexico	Arrecife Alacranes, Yucatán	C	22.53	-89.77		2013
111	Original article	Herrera-Moreno & Betancourt (2002)	Domin. Rep.	Cayito de Arena, Buen Hombre Coast	B	19.86	-71.38		2002
112	Original article	Herrera-Moreno & Betancourt (2002)	Haiti	Haiti	B	18.61	-72.39		2002
113	Original article	Le Sueur (1817)	StVincent	Lesser Antilles, St. Vincent, Windward Islands	C	13.24	-61.19		1817

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114	Original article	Le Sueur (1817)	Barbados	Lesser Antilles, Barbados	B	13.17	-59.53		1817
115	Original article	Duchassaing & Michelotti (1864)	USA	St. Thomas, U.S. Virgin Islands, Caribbean Sea	C	18.34	-64.94		1864
116	Original article	Cutress & Ross (1969)	Puerto Rico	Puerto Rico, Mayagüez	B	18.2	-67.16		1969
117	Original article	Sandberg (1972)	USA	Sta. Teresa's Beach and Alligator Point, Franklin Co., Florida	A	29.92	-84.42		1972
118	Original article	Conover (1976)	USA	Tampa Bay, south of Saint Petesburg, Florida	B	27.75	-82.57		1976
119	Original article	Manjarés (1977)	Colombia	Colombia, Punta Betín, Santa Marta	B	11.25	-74.22	4–8	1977
120	Doctoral thesis	Correa (1964)	Brazil	Saco da Ribeira, Ubatuba	B	-23.5	-45.12		1964
121	Doctoral thesis	Correa (1964)	Brazil	Praia do Segredo	B	-23.82	-45.41	5	1964
122	Doctoral thesis	Correa (1964)	Brazil	Praia de Bertioga	B	-23.82	-46.06	10	1964
123	Doctoral thesis	Correa (1964)	Brazil	Ilha do Bom Abrigo	B	-25.13	-47.86	15	1964
124	Doctoral thesis	Correa (1964)	Brazil	Enseada de Pecém, Fortaleza, Ceará	B	-3.54	-38.84		1964
125	Original article	Hedgpeth (1954)	USA	Beaufort	B	34.72	-76.65	18–36	1954
126	Original article	Pax (1924)	Curacao	Curazao, Caracas Baai	B	12.07	-68.87		1924
127	Doctoral thesis	Gusmao (2010)	USA	Between Tamaulipas and Texas, Gulf of Mexico	A	24.83	-97.05		2010
128	Doctoral thesis	Gusmao (2010)	USA	E. of Beaufort Bay, North Carolina	B	34.72	-76.65	12	2010
129	Doctoral thesis	Gusmao (2010)	Suriname	Suriname	C	6.50°	55.86°	31	2010
130	Doctoral thesis	Gusmao (2010)	USA	Grand Island, Louisiana	B	29.25	-89.99	9	2010
131	Doctoral thesis	Gusmao (2010)	USA	Fort Macon, North Carolina	B	34.679	-76.682		2010
132	Doctoral thesis	Gusmao (2010)	Puerto Rico	Mayagüez, Puerto Rico, Caribbean Ocean, North Atlantic Ocean	B	18.2	-67.16		2010
133	Doctoral thesis	Gusmao (2010)	Puerto Rico	Turrumote Island	B	17.94	-67.05	20	2010
134	Doctoral thesis	Gusmao (2010)	USA	Off Palm Bay, Florida	A	28.13	-79.9	183	2010
135	Doctoral thesis	Gusmao (2010)	USA	Off North Carolina	A	33.33	-77.76	25	2010
136	Doctoral thesis	Gusmao (2010)	USA	Sapelo Island, Georgia	B	31.442	-81.227		2010
137	Doctoral thesis	Gusmao (2010)	USA	St John, U.S. Virgin Islands	B	18.32	-64.73	15	2010
138	OBIS 414745	Texas Cooperative Wildlife Coll. Marine Invertebrates	USA	In front Galveston Island, Texas	A	28.950	-94.910	10	1971
139	OBIS 414745	Texas Cooperative Wildlife Coll. Marine Invertebrates	USA	In front Bay City, Texas	A	28.5	-95.730	19	1971
140	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	9.5	2004
141	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	9.5	2004
142	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	6	2005
143	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	6	2005
144	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	9.5	2005
145	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	9.5	2005
146	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	9.5	2005
147	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	6	2005
148	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	6	2004
149	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	6	2005
150	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	6	2004
151	OBIS 414745	NMNH Invertebrate Zoology Coll.	USA	In front of Savannah, Georgia	A	31.892	-80.575	15	1940
152	OBIS 414745	South TX Outer Continental Shelf and MI, AL, and FL Outer Continental Shelf benthic organism sampling 1974–1978	USA	In front Mata Gorda Island, Texas	A	28.200	-96.450		1977

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153	OBIS 414745	South TX Outer Continental Shelf and MI, AL, and FL Outer Continental Shelf benthic organism sampling 1974-1978	USA	In front Mata Gorda Island, Texas	A	28.233	-96.483		1977
154	OBIS 414745	Texas Cooperative Wildlife Coll. Marine Invertebrates	USA	Rock Island, Kleberg, Texas	A	27.430	-97.320		1983
155	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	6	2005
156	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	6	2005
157	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	6	2005
158	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	9.5	2005
159	OBIS 414745	NMNH Invertebrate Zoology Coll.	USA	In front Sea Island, Georgia	A	31.142	-81	15	1940
160	OBIS 414745	South TX Outer Continental Shelf and MI, AL, and FL Outer Continental Shelf benthic organism sampling 1974-1978	USA	In front Mata Gorda Island, Texas	A	28.233	-96.483		1976
161	OBIS 414745	South TX Outer Continental Shelf and MI, AL, and FL Outer Continental Shelf benthic organism sampling 1974-1978	USA	In front Port Aransas, Texas	A	27.5	-96.75		1977
162	OBIS 414745	NMNH Invertebrate Zoology Coll.	USA	In front Beaufort, North Carolina	A	32	-80.417	18	1940
163	OBIS 414745	South TX Outer Continental Shelf and MI, AL, and FL Outer Continental Shelf benthic organism sampling 1974-1978	USA	In front Mata Gorda Island, Texas	A	28.200	-96.450		1977
164	OBIS 414745	Texas Cooperative Wildlife Coll. Marine Invertebrates	USA	In front Louisiana	A	28.720	-89.830	82	1972
165	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	6	2004
166	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	9.5	2004
167	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	6	2005
168	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	9.5	2005
169	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	6	2004
170	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	9.5	2005
171	OBIS 414745	NMNH Invertebrate Zoology Coll.	Surinam	In front Paramaribo, Surinam	A	6.367	-55.100	26	1957
172	OBIS 414745	South TX Outer Continental Shelf and MI, AL, and FL Outer Continental Shelf benthic organism sampling 1974-1978	USA	In front Mata Gorda Island, Texas	A	28.200	-96.450		1974
173	OBIS 414745	South TX Outer Continental Shelf and MI, AL, and FL Outer Continental Shelf benthic organism sampling 1974-1978	USA	In front Mata Gorda Island, Texas	A	28.200	-96.450		1975
174	OBIS 414745	South TX Outer Continental Shelf and MI, AL, and FL Outer Continental Shelf benthic organism sampling 1974-1978	USA	In front Mata Gorda Island, Texas	A	28.200	-96.450		1977
175	OBIS 414745	Marine and Coastal Research Institute - INVEMAR, Colombia,IABIN	Colombia	Bahía de Concha, Colombia	A	11.311	-74.167		1997
176	OBIS 414745	Marine and Coastal Research Institute - INVEMAR, Colombia,IABIN	Colombia	Las Berrugas, Colombia	A	9.700	-75.642		2001
177	OBIS 414745	NMNH Invertebrate Zoology Coll.	Surinam	In front Paramaribo, Surinam	A	6.5	-55.867	31	1958
178	OBIS 414745	South TX Outer Continental Shelf and MI, AL, and FL Outer Continental Shelf benthic organism sampling 1974-1978	USA	In front Port Aransas, Texas	A	27.5	-96.75		1977
179	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	9.5	2004
180	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	6	2004
181	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	9.5	2005
182	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	6	2004
183	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	9.5	2005
184	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	9.5	2004
185	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	6	2005
186	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	9.5	2005

No.	Source	Occurrence ID or citation	Country	Locality	Data completed by*	Latitude	Longitude	Depth (m)	Year
187	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Itapoá	A	-25.989	-48.570	9.5	2004
188	OBIS 414745	South TX Outer Continental Shelf and MI, AL, and FL Outer Continental Shelf benthic organism sampling 1974-1978	USA	In front Mata Gorda Island, Texas	A	28.233	-96.483		1977
189	OBIS 414745	NMNH Invertebrate Zoology Coll.	USA	In front Avon, North Carolina	A	35.354	-75.387	26	1884
190	OBIS 414745	South TX Outer Continental Shelf and MI, AL, and FL Outer Continental Shelf benthic organism sampling 1974-1978	USA	In front Port Aransas, Texas	A	27.667	-96.983		1977
191	OBIS 414745	NMNH Invertebrate Zoology Coll.	USA	In front of Louisiana	A	29.047	-90.163	12	1979
192	OBIS 414745	Texas Cooperative Wildlife Coll. Marine Invertebrates	USA	In front Mata Gorda Island, Texas	A	28.220	-95.980	28	1971
193	OBIS 414745	Texas Cooperative Wildlife Coll. Marine Invertebrates	USA	In front Pensacola, Florida	A	29.800	-87.380	40	1988
194	OBIS 414745	Hexacorallians of the World	USA	In front Pensacola, Florida	A	30	-84.400		
195	OBIS 414745	Univ. Simon Bolivar Museum of Natural Sciences	Venezuela	In front Dajaburo, Falcón, Venezuela	A	11.418	-70.675		2007
196	OBIS 414745	NMNH Invertebrate Zoology Coll.	USA	In front Timbalier Bay, Louisiana	A	29.047	-90.163	12	1978
197	OBIS 414745	NMNH Invertebrate Zoology Coll.	USA	Between North Carolina and Bermuda	A	30.933	-71.001	18	1940
198	OBIS 414745	NMNH Invertebrate Zoology Coll.	USA	In front of Louisiana	A	29.047	-90.163	12	1978
199	OBIS 414745	NMNH Invertebrate Zoology Coll.	USA	In front Beaufort, North Carolina	A	34.550	-76.683	16	1940
200	OBIS 414745	South TX Outer Continental Shelf and MI, AL, and FL Outer Continental Shelf benthic organism sampling 1974-1978	USA	In front Port Aransas, Texas	A	27.667	-96.983		1977
201	OBIS 414745	South TX Outer Continental Shelf and MI, AL, and FL Outer Continental Shelf benthic organism sampling 1974-1978	USA	In front Port Aransas, Texas	A	27.667	-96.983		1977
202	OBIS 414745	South TX Outer Continental Shelf and MI, AL, and FL Outer Continental Shelf benthic organism sampling 1974-1978	USA	In front Port Aransas, Texas	A	27.667	-96.983		1977
203	OBIS 414745	NMNH Invertebrate Zoology Coll.	USA	In front of Louisiana	A	29.047	-90.163	12	1979
204	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Guaratuba	A	-25.885	-48.557	10	2004
205	OBIS 414745	Vulnerable marine ecosystems in the South Pacific Ocean region	Colombia	In front Rincón, Colombia	A	9.742	-75.684		2001
206	OBIS 414745	NMNH Invertebrate Zoology Coll.	USA	in front Palm Bay, Florida	A	28.133	-79.900	183	1940
207	OBIS 414745	Marine and Coastal Research Institute - INVEMAR, Colombia,IABIN	Colombia	Bahía de Concha, Colombia	A	11.297	-74.154		2001
208	OBIS 414745	NMNH Invertebrate Zoology Coll.	USA	In front Dauphin Island, Alabama	A	29.875	-88.067	35	1950
209	OBIS 414745	Texas Cooperative Wildlife Coll. Marine Invertebrates	USA	In front Galveston Island, Texas	A	29.130	-94.880	10	1970
210	OBIS 414745	Texas Cooperative Wildlife Coll. Marine Invertebrates	USA	In front Triumph, Louisiana	A	29.180	-88.960	18	1972
211	OBIS 414745	Texas Cooperative Wildlife Coll. Marine Invertebrates	USA	In front March Island, Louisiana	A	28.410	-92.5	59	1971
212	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	Saco da Ribeira, Ubatuba	A	-23.501	-45.121	1	
213	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Guaratuba	A	-25.885	-48.557	10	2004
214	OBIS 414745	NMNH Invertebrate Zoology Coll.	Suriname	In front Paramaribo, Surinam	A	6.383	-55.092	27	1957
215	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Guaratuba	A	-25.885	-48.557	10	2004
216	OBIS 414745	Texas Cooperative Wildlife Coll. Marine Invertebrates	USA	In front Triumph, Louisiana	A	28.720	-89.480	108	1972
217	OBIS 414745	NMNH Invertebrate Zoology Coll.	USA	Open sea, in front of North Carolina	A	33.537	-77.418	29	1980
218	OBIS 414745	Texas Cooperative Wildlife Coll. Marine Invertebrates	USA	In front Chandeleur Island, Louisiana	A	29.670	-88.680	18	1972
219	OBIS 414745	Texas Cooperative Wildlife Coll. Marine Invertebrates	USA	In front Galveston Island, Texas	A	29.240	-94.430	17	1971
220	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	Barequezaba	A	-23.828	-45.423	2.5	
221	OBIS 414745	NMNH Invertebrate Zoology Coll.	USA	In front Port Orange, Florida	A	29.158	-80.875	18	1940
222	OBIS 414745	Marine and Coastal Research Institute - INVEMAR, Colombia,IABIN	Colombia	In front Rincón, Colombia	A	9.742	-75.684		2001

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223	OBIS 414745	NMNH Invertebrate Zoology Coll.	USA	In front Beaufort, North Carolina	A	31.608	-79.717	73	1940
224	OBIS 414745	Texas Cooperative Wildlife Coll. Marine Invertebrates	USA	In front Port Aransas, Texas	A	27.630	-96.550	59	1971
225	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	Ilha do Cardoso	A	-25.120	-47.861	14.5	
226	OBIS 414745	NMNH Invertebrate Zoology Coll.	USA	Beaufort, North Carolina	A	34.717	-76.650		1954
227	OBIS 414745	Texas Cooperative Wildlife Coll. Marine Invertebrates	USA	In front Mata Gorda Island, Texas	A	28.150	-95.800	40	1971
228	OBIS 414745	Texas Cooperative Wildlife Coll. Marine Invertebrates	USA	In front Galveston Island, Texas	A	29.240	-94.430	17	1971
229	OBIS 414745	Texas Cooperative Wildlife Coll. Marine Invertebrates	USA	In front Galveston Island, Texas	A	29.240	-94.430	17	1971
230	OBIS 414745	Cnidaria Sao Paulo 2000-2010 and Brazil	Brazil	In front Bertioga	A	-23.850	-46.124	12.5	
231	OBIS 414745	Vulnerable marine ecosystems in the South Pacific Ocean region	Colombia	In front las Berrugas, Colombia	A	9.700	-75.642		2001
232	OBIS 414745	Univ. of Florida Museum of Natural History Invertebrate Zoology Coll.	USA	Out off Dry Tortugas, Florida	A	24.564	-83.563		2004
233	OBIS 414745	NMNH Invertebrate Zoology Coll.	USA	Open sea, in front North Myrtle Beach, South Carolina	A	33.333	-77.767	25	1977
234	OBIS 414745	NMNH Invertebrate Zoology Coll.	USA	Port Aransas, Texas	A	27.833	-97.050		1946
235	This study	New record	Mexico	Isla de En medio, Sistema Arrecifal Veracruzano, México	C	19.108	-95.940	1.5	2015
236	This study	New record	Mexico	La Gallega, Sistema Arrecifal Veracruzano, México	C	19.221	-96.128	1.5	2016